

80/567541

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4359ptus sequence
SEQUENCE LISTING

<110> POCCIA , Fabrizio et al

<120> Method and diagnostic tests based on flow cytometric analysis of
antigen-specific T lymphocytes

<130> 4359PTUS

<140> PCT/EP2004/051726

<141> 2004-08-05

<150> RM2003A000386

<151> 2003-08-05

<160> 172

<170> PatentIn version 3.3

<210> 1

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<212> PRT

<213> Human immunodeficiency virus type 1

<220>

<221> PEPTIDE

<222> (1)..(15)

<400> 1

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Arg Leu
1 5 10 15

<210> 2

<211> 15

<212> PRT

<213> Human immunodeficiency virus type 1

<220>

<221> peptide

<222> (1)..(15)

<400> 2

Pro Gly Gly Lys Lys Lys Tyr Arg Leu Lys His Leu Val Trp Ala
1 5 10 15

<210> 3

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<213> Human immunodeficiency virus type 1

<220>

<221> PEPTIDE

4359ptus sequence

<222> (1)..(15)

<400> 3

Pro Gly Gly Lys Lys Lys Tyr Arg Met Lys His Leu Val Trp Ala
1 5 10 15

<210> 4

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<213> Human immunodeficiency virus type 1

<220>

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<222> (1)..(15)

<400> 4

Lys Lys Tyr Arg Met Lys His Leu Val Trp Ala Ser Arg Glu Leu
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<211> 15

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<213> Human immunodeficiency virus type 1

<220>

<221> peptide

<222> (1)..(15)

<400> 5

Lys His Leu Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val
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<210> 6

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<213> Human immunodeficiency virus type 1

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<222> (1)..(15)

<400> 6

Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr
1 5 10 15

<210> 7

<211> 15

<212> PRT

4359ptus sequence

<213> Human immunodeficiency virus type 1

<220>

<221> peptide

<222> (1)..(15)

<400> 7

Arg	Glu	Leu	Glu	Arg	Phe	Ala	Val	Asp	Pro	Gly	Leu	Leu	Glu	Thr
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<210> 8

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<213> Human immunodeficiency virus type 1

<220>

<221> peptide

<222> (1)..(15)

<400> 8

Ser	Ala	Pro	Lys	Thr	Gly	Thr	Glu	Glu	Leu	Arg	Ser	Leu	Tyr	Asn
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<210> 9

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<212> PRT

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<220>

<221> peptide

<222> (1)..(15)

<400> 9

Ser	Leu	Tyr	Asn	Thr	Val	Ala	Val	Leu	Tyr	Cys	Val	His	Gln	Arg
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<210> 10

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<213> Human immunodeficiency virus type 1

<220>

<221> peptide

<222> (1)..(15)

<400> 10

Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys	Val	Ile	Glu	Glu	Lys
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4359ptus sequence

<210> 11
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<400> 11

Ser	Pro	Glu	Val	Ile	Pro	Met	Phe	Ser	Ala	Leu	Ser	Glu	Gly	Ala
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Ala	Thr	Pro	Gln	Asp	Leu	Asn	Met	Met	Leu	Asn	Ile	Val	Gly	Gly
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<210> 13
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Ala	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu	Asn	Ile	Val	Gly	Gly
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4359ptus sequence

<400> 14

Gln Asp Leu Asn Met Met Leu Asn Ile Val Gly Gly His Gln Ala
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<210> 15

<211> 15

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<213> Human immunodeficiency virus type 1

<220>

<221> peptide

<222> (1)..(15)

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Met Met Leu Asn Ile Val Gly Gly His Gln Ala Ala Met Gln Met
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<210> 16

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<222> (1)..(15)

<400> 16

Ser Asn Pro Pro Ile Pro Val Gly Asp Ile Tyr Lys Arg Trp Ile
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-<210> 17

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<220>

<221> peptide

<222> (1)..(15)

<400> 17

Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
1 5 10 15

<210> 18

<211> 15

<212> PRT

<213> Human immunodeficiency virus type 1

4359ptus sequence

<220>
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 <222> (1)..(15)

<400> 18

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<210> 19
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<400> 19

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1				5					10					15

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 <222> (1)..(15)

<400> 20

Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Lys	Gln	Gly	Pro
1				5					10					15

<210> 21
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<400> 21

Asn	Ser	Ser	Arg	His	Ser	Gly	Lys	Cys	Arg	Arg	Gln	Arg	Arg	Ala	Leu
1				5					10					15	

<210> 22
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 <212> PRT
 <213> Human cytomegalovirus

4359ptus sequence

<400> 22

Ala Leu Ser Ala Pro Pro Leu Thr Phe Leu Ala Thr Thr Thr Thr
1 5 10 15

<210> 23

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 23

Arg Gln Pro Arg Val His Arg Gly Thr Tyr His Leu Ile Gln Leu
1 5 10 15

<210> 24

<211> 16

<212> PRT

<213> Human cytomegalovirus

<400> 24

Thr Tyr His Leu Ile Gln Leu His Leu Asp Leu Arg Pro Glu Glu Leu
1 5 10 15

<210> 25

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 25

Arg Pro Glu Glu Leu Arg Asp Pro Phe Gln Ile Leu Leu Ser Thr
1 5 10 15

<210> 26

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 26

Ser Asp Val Arg Pro Ala Phe Ser Leu Phe Pro Ala Arg Pro Gly
1 5 10 15

<210> 27

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 27

Phe Pro Ala Arg Pro Gly Cys His Ile Leu Arg Ser Val Ile Asp

4359ptus sequence

1 5 10 15

<210> 28
 <211> 15
 <212> PRT
 <213> Human cytomegalovirus
 <400> 28

Phe Ala Leu Arg Ile Ile Thr Pro Pro Leu Lys Arg Val Pro Leu
 1 5 10 15

<210> 29
 <211> 15
 <212> PRT
 <213> Human cytomegalovirus
 <400> 29

Phe Ala Leu Arg Ile Ile Thr Pro Pro Leu Lys Arg Val Pro Leu
 1 5 10 15

<210> 30
 <211> 15
 <212> PRT
 <213> Human cytomegalovirus
 <400> 30

Thr Asp Ala Asp Leu Thr Pro Thr Leu Thr Val Arg Val Arg His
 1 5 10 15

<210> 31
 <211> 15
 <212> PRT
 <213> Human cytomegalovirus
 <400> 31

Ile Ser Gly Pro Arg Gly Leu Thr Ser Arg Ile Ser Ala Arg Leu
 1 5 10 15

<210> 32
 <211> 16
 <212> PRT
 <213> Human cytomegalovirus
 <400> 32

Asp Pro Asn Glu Ser Pro Pro Asp Leu Thr Leu Ser Ser Leu Thr Leu
 1 5 10 15

<210> 33

4359ptus sequence

<211> 15
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<400> 33

Thr Leu Tyr Gln Asp Gly Met Leu Arg Phe Asn Val Thr Cys Asp
 1 5 10 15

<210> 34
 <211> 15
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 <213> Human cytomegalovirus

<400> 34

Thr Glu Ala Pro Ala Asp Pro Val Ala Phe Arg Leu Arg Leu Arg
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<210> 35
 <211> 15
 <212> PRT
 <213> Human cytomegalovirus

<400> 35

Phe Arg Leu Arg Leu Arg Arg Glu Thr Val Arg Arg Pro Phe Phe
 1 5 10 15

<210> 36
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 <213> Human cytomegalovirus

<400> 36

Arg Arg Pro Phe Phe Ser Asp Ala Pro Leu Pro Tyr Phe Val Pro
 1 5 10 15

<210> 37
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 <212> PRT
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<400> 37

Asp Glu Gly Leu Glu Val Arg Val Pro Tyr Glu Leu Thr Leu Lys
 1 5 10 15

<210> 38
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 <213> Human cytomegalovirus

4359ptus sequence

<400> 38

Arg	Ile	Tyr	Arg	Arg	Phe	Tyr	Gly	Pro	Tyr	Leu	Gly	Val	Phe	Val
1				5					10					15

<210> 39

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 39

Tyr	Leu	Gly	Val	Phe	Val	Pro	His	Asn	Arg	Gln	Gly	Leu	Lys	Met
1				5					10					15

<210> 40

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 40

Leu	Lys	Met	Pro	Val	Thr	Val	Trp	Leu	Pro	Arg	Ser	Trp	Leu	Glu
1				5					10					15

<210> 41

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 41

Thr	Val	Trp	Leu	Pro	Arg	Ser	Trp	Leu	Glu	Leu	Thr	Val	Leu	Val
1				5					10					15

<210> 42

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 42

Ala	Thr	Phe	Pro	Arg	Asp	Ala	Leu	Leu	Gly	Arg	Leu	Tyr	Phe	Ile
1				5					10					15

<210> 43

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 43

Ala	Leu	Leu	Gly	Arg	Leu	Tyr	Phe	Ile	Ser	Ser	Lys	His	Thr	Leu
1				5					10					15

4359ptus sequence

<210> 44
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 <213> Human coronavirus

<400> 44

Asn	Ser	Val	Leu	Leu	Phe	Leu	Ala	Phe	Val	Val	Phe	Leu	Leu	Val
1			5					10					15	

<210> 45
 <211> 15
 <212> PRT
 <213> Human coronavirus

<400> 45

Leu	Leu	Phe	Leu	Ala	Phe	Val	Val	Phe	Leu	Leu	Val	Thr	Leu	Ala
1			5					10					15	

<210> 46
 <211> 15
 <212> PRT
 <213> Human coronavirus

<400> 46

Leu	Ala	Trp	Ile	Met	Leu	Leu	Gln	Phe	Ala	Tyr	Ser	Asn	Arg	Asn
1				5					10					15

<210> 47
 <211> 15
 <212> PRT
 <213> Human coronavirus

<400> 47

Met	Glu	Ser	Glu	Leu	Val	Ile	Gly	Ala	Val	Ile	Ile	Arg	Gly	His
1				5					10					15

<210> 48
 <211> 15
 <212> PRT
 <213> Human coronavirus

<400> 48

Met	Ala	Cys	Ile	Val	Gly	Leu	Met	Trp	Leu	Ser	Tyr	Phe	Val	Ala
1				5					10					15

<210> 49
 <211> 15

4359ptus sequence

<212> PRT

<213> Human coronavirus

<400> 49

Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile Arg
1 5 10 15

<210> 50

<211> 15

<212> PRT

<213> Human coronavirus

<400> 50

Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr Tyr Leu
1 5 10 15

<210> 51

<211> 15

<212> PRT

<213> Human coronavirus

<400> 51

Gln Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu
1 5 10 15

<210> 52

<211> 15

<212> PRT

<213> Human coronavirus

<400> 52

Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr Tyr Leu Gly
1 5 10 15

<210> 53

<211> 15

<212> PRT

<213> Human coronavirus

<400> 53

Glu Thr Ala Leu Ala Leu Leu Leu Leu Asp Arg Leu Asn Gln Leu
1 5 10 15

<210> 54

<211> 15

<212> PRT

<213> Human coronavirus

<400> 54

4359ptus sequence

Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr Phe Glu
1 5 10 15

<210> 55
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<212> PRT
<213> Human coronavirus

<400> 55

Cys Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr
1 5 10 15

<210> 56
<211> 15
<212> PRT
<213> Human coronavirus

<400> 56

Asn Cys Val Ala Asp Tyr Ser Val Leu Tyr Asn Ser Thr Phe Phe
1 5 10 15

<210> 57
<211> 15
<212> PRT
<213> Human coronavirus

<400> 57

Ile Ala Pro Gly Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys
1 5 10 15

<210> 58
<211> 15
<212> PRT
<213> Human coronavirus

<400> 58

Val Ser Leu Leu Arg Ser Thr Ser Gln Lys Ser Ile Val Ala Tyr
1 5 10 15

<210> 59
<211> 15
<212> PRT
<213> Human coronavirus

<400> 59

Ser Ile Thr Thr Glu Val Met Pro Val Ser Met Ala Lys Thr Ser
1 5 10 15

4359ptus sequence

<210> 60
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 <212> PRT
 <213> Human coronavirus

<400> 60

Gln	Val	Lys	Gln	Met	Tyr	Lys	Thr	Pro	Thr	Leu	Lys	Tyr	Phe	Gly
1				5					10					15

<210> 61
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 <212> PRT
 <213> Human coronavirus

<400> 61

Gln	Ile	Pro	Phe	Ala	Met	Gln	Met	Ala	Tyr	Arg	Phe	Asn	Gly	Ile
1				5					10					15

<210> 62
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 <212> PRT
 <213> Human coronavirus

<400> 62

Ile	Ser	Ser	Val	Leu	Asn	Asp	Ile	Leu	Ser	Arg	Leu	Asp	Lys	Val
1				5					10					15

<210> 63
 <211> 15
 <212> PRT
 <213> Human coronavirus

<400> 63

Arg	Leu	Asp	Lys	Val	Glu	Ala	Glu	Val	Gln	Ile	Asp	Arg	Leu	Ile
1				5					10					15

<210> 64
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 <213> Human coronavirus

<400> 64

Tyr	Phe	Val	Gly	Tyr	Leu	Lys	Pro	Thr	Thr	Phe	Met	Leu	Lys	Tyr
1				5					10					15

<210> 65
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 <212> PRT

4359ptus sequence

<213> Human coronavirus

<400> 65

Ser	Asn	Cys	Val	Ala	Asp	Tyr	Ser	Val	Leu	Tyr	Asn	Ser	Thr	Phe
1				5					10					15

<210> 66

<211> 15

<212> PRT

<213> Human coronavirus

<400> 66

Arg	Asp	Pro	Lys	Thr	Ser	Glu	Ile	Leu	Asp	Ile	Ser	Pro	Cys	Ser
1				5					10					15

<210> 67

<211> 15

<212> PRT

<213> Human coronavirus

<400> 67

Gly	Ser	Phe	Cys	Thr	Gln	Leu	Asn	Arg	Ala	Leu	Ser	Gly	Ile	Ala
1				5					10					15

<210> 68

<211> 15

<212> PRT

<213> Human coronavirus

<400> 68

Val	Lys	Gln	Met	Tyr	Lys	Thr	Pro	Thr	Leu	Lys	Tyr	Phe	Gly	Gly
1				5					10					15

<210> 69

<211> 15

<212> PRT

<213> Human coronavirus

<400> 69

Ala	Gly	Phe	Met	Lys	Gln	Tyr	Gly	Glu	Cys	Leu	Gly	Asp	Ile	Asn
1				5					10					15

<210> 70

<211> 15

<212> PRT

<213> Human coronavirus

<400> 70

4359ptus sequence

Pro Pro Leu Leu Thr Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala
1 5 10 15

<210> 71

<211> 15

<212> PRT

<213> Human coronavirus

<400> 71

Ile Ser Ser Val Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val
1 5 10 15

<210> 72

<211> 15

<212> PRT

<213> Human coronavirus

<400> 72

Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn
1 5 10 15

<210> 73

<211> 15

<212> PRT

<213> Human coronavirus

<400> 73

Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys Asn His
1 5 10 15

<210> 74

<211> 15

<212> PRT

<213> Bacillus anthracis

<400> 74

Glu Ser Glu Ser Ser Ser Gln Gly Leu Leu Gly Tyr Tyr Phe Ser
1 5 10 15

<210> 75

<211> 15

<212> PRT

<213> Bacillus anthracis

<400> 75

Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile Trp Ser
1 5 10 15

4359ptus sequence

<210> 76
 <211> 15
 <212> PRT
 <213> Bacillus anthracis

<400> 76

Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys Gly Leu Asp Phe Lys
 1 5 10 15

<210> 77
 <211> 15
 <212> PRT
 <213> Bacillus anthracis

<400> 77

Ile Ser Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser
 1 5 10 15

<210> 78
 <211> 15
 <212> PRT
 <213> Bacillus anthracis

<400> 78

Val Ser Pro Glu Ala Arg His Pro Leu Val Ala Ala Tyr Pro Ile
 1 5 10 15

<210> 79
 <211> 15
 <212> PRT
 <213> Bacillus anthracis

<400> 79

Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val Leu Gly Lys
 1 5 10 15

<210> 80
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 <212> PRT
 <213> Bacillus anthracis

<400> 80

Lys Ala Lys Glu Asn Gln Leu Ser Gln Ile Leu Ala Pro Asn Asn
 1 5 10 15

<210> 81
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 <213> Bacillus anthracis

4359ptus sequence

<400> 81

Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe Glu Asn Gly Arg
1 5 10 15

<210> 82

<211> 15

<212> PRT

<213> Bacillus anthracis

<400> 82

Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser Gly Tyr Ile Val
1 5 10 15

<210> 83

<211> 15

<212> PRT

<213> Bacillus anthracis

<400> 83

Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr Ile
1 5 10 15

<210> 84

<211> 15

<212> PRT

<213> Variola virus

<400> 84

Ser Lys Asn Glu Ala Glu Lys Leu Ile Thr Ser Ala Phe Asp Leu
1 5 10 15

<210> 85

<211> 15

<212> PRT

<213> Variola virus

<400> 85

Arg Gln Ser Ser Cys Lys Met Ala Leu Leu Phe Lys Asn Leu Ala
1 5 10 15

<210> 86

<211> 15

<212> PRT

<213> Variola virus

<400> 86

Ile Cys Leu Lys Asp Lys Ser Glu Leu Tyr Ser Ala Tyr Lys Thr

4359ptus sequence

1	5	10	15
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<210> 87
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 <213> Variola virus

<400> 87

Thr	Arg	Glu	Arg	Asn	Lys	Ile	Val	Glu	Leu	Glu	Lys	Glu	Leu	Asn
1				5				10						15

<210> 88
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 <213> Variola virus

<400> 88

Ile	Cys	Ile	Arg	Ile	Ser	Met	Val	Ile	Ser	Leu	Leu	Ser	Met	Ile
1				5				10						15

<210> 89
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 <213> Variola virus

<400> 89

Gly	Leu	Tyr	Tyr	Gln	Gly	Ser	Cys	Tyr	Ile	Phe	His	Ser	Asp	Tyr
1				5				10						15

<210> 90
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 <213> Variola virus

<400> 90

Thr	Leu	Pro	Asn	Lys	Ser	Asp	Val	Leu	Thr	Thr	Trp	Leu	Ile	Asp
1				5				10						15

<210> 91
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 <212> PRT
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<400> 91

Gly	His	Ser	Glu	Thr	Asp	Thr	Thr	Thr	Glu	Tyr	Leu	Leu	Pro	Asn
1				5				10						15

<210> 92

4359ptus sequence

<211> 15
 <212> PRT
 <213> Variola virus

<400> 92

Gly Pro Ser Thr Tyr Tyr Pro His Tyr Lys Ser Cys Ala Leu Val
 1 5 10 15

<210> 93
 <211> 15
 <212> PRT
 <213> Variola virus

<400> 93

Thr Ser Pro Ala Arg Glu Asn Tyr Phe Met Arg Trp Leu Ser Asp
 1 5 10 15

<210> 94
 <211> 15
 <212> PRT
 <213> Variola virus

<400> 94

Arg Glu Val Asn Lys Ala Leu Tyr Asp Leu Gln Arg Ser Ala Met
 1 5 10 15

<210> 95
 <211> 15
 <212> PRT
 <213> Variola virus

<400> 95

Val Ile Pro Ala Lys Lys Ile Ile Asp Trp Lys Asn Ala Asn Pro
 1 5 10 15

<210> 96
 <211> 15
 <212> PRT
 <213> Variola virus

<400> 96

Met Ala Ser Leu Leu Tyr Phe Ile Leu Phe Leu Leu Phe Val Cys
 1 5 10 15

<210> 97
 <211> 15
 <212> PRT
 <213> Variola virus

4359ptus sequence

<400> 97

Ile Phe Thr Asp Ala Ser Thr Val Ala Ser Ala Gln Ile Tyr Leu
1 5 10 15

<210> 98

<211> 15

<212> PRT

<213> Variola virus

<400> 98

Thr Ser His Leu Asn Pro Ser Ile Glu Lys His Val Gly Ile Tyr
1 5 10 15

<210> 99

<211> 15

<212> PRT

<213> Variola virus

<400> 99

Leu Ser Ala Lys Val Tyr Met Leu Glu Asn Ile Gln Val Met Lys
1 5 10 15

<210> 100

<211> 15

<212> PRT

<213> Variola virus

<400> 100

Thr Tyr His Leu Glu Asn Asp Lys Ile Glu Asp Leu Ile Asn Gln
1 5 10 15

<210> 101

<211> 15

<212> PRT

<213> Variola virus

<400> 101

Asp Ser Met Tyr Val Ile Pro Asp Glu Leu Ile Asp Val Leu Lys
1 5 10 15

<210> 102

<211> 15

<212> PRT

<213> Variola virus

<400> 102

Ala Tyr Val Pro Ala Met Phe Thr Ala Ala Leu Asn Ile Gln Thr
1 5 10 15

4359ptus sequence

<210> 103
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<212> PRT
<213> Variola virus

<400> 103

Val Ile Gly Val Ile Ile Leu Ala Ala Leu Phe Met Tyr Tyr Ala
1 5 10 15

<210> 104
<211> 9
<212> PRT
<213> Homo sapiens

<400> 104

Lys Gly Glu Glu Glu Leu Gln Lys Tyr
1 5

<210> 105
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<212> PRT
<213> Homo sapiens

<400> 105

Phe Thr Glu Ile Gln Lys Leu Val Leu
1 5

<210> 106
<211> 9
<212> PRT
<213> Homo sapiens

<400> 106

Phe Thr Glu Ser Arg Thr Leu His Arg
1 5

<210> 107
<211> 9
<212> PRT
<213> Homo sapiens

<400> 107

Ser Ser Leu Val Val Asp Glu Thr Tyr
1 5

<210> 108
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4359ptus sequence

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Ile Thr Glu Cys Cys Lys Leu Thr Thr
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Phe Ser Asp Asp Lys Phe Ile Phe His
1 5

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Glu Thr Phe Met Asn Lys Phe Ile Tyr
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Ser Ser Glu Leu Met Ala Ile Thr Arg
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Ala Glu Glu Gly Gln Lys Leu Ile Ser
1 5

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4359ptus sequence

Trp Val Glu Ser Ile Phe Leu Ile Phe
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Ile Ala Asp Phe Ser Gly Leu Leu Glu
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Ser Arg Thr Leu His Arg Asn Glu Tyr
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Ala Gln Phe Val Gln Glu Ala Thr Tyr
1 5

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Phe Leu Ala Ser Phe Val His Glu Tyr
1 5

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Val Ile Leu Arg Val Ala Lys Gly Tyr
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4359ptus sequence

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Ile Gln Glu Ser Gln Ala Leu Ala Lys
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Ile Thr Glu Glu Gln Leu Glu Ala Val
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His Glu Lys Glu Ile Leu Glu Lys Tyr
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Gln Ser Glu Glu Gly Arg His Asn Cys
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Leu Ser Glu Pro Ala Glu Leu Thr Asp
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4359ptus sequence

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Gly Ser Glu Pro Cys Ala Leu Pro Glu
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Ser His Ser Phe Pro His Pro Leu Tyr
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Ser Pro Glu Cys Ile Phe Ile Cys Ala
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Ala Ser Glu Ser Glu Met Ile Asn Ile
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Glu Ser Glu Met Ile Asn Ile Asn Pro
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4359ptus sequence

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Ala Leu Pro Glu Arg Pro Ser Leu Tyr
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Ser Leu Tyr Thr Lys Val Val His Tyr
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Ala Thr Glu Ser Pro Glu Cys Ile Phe
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Arg Thr Glu Ile Asn Lys Ala Leu Leu
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Glu Met Glu Asn Gly Glu Leu Ala Ser
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4359ptus sequence

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Leu Tyr Asp Met Ser Leu Leu Lys Asn
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Ser His Asp Leu Met Leu Leu Arg Leu
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Ser Ile Glu Pro Glu Glu Phe Leu Thr
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Arg Thr Glu Ile Asn Ser Glu Met Glu
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Glu Pro Ala Leu Gly Thr Thr Cys Tyr
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4359ptus sequence

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Ser Gly Asp Ser Gly Gly Pro Leu Val
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Leu Pro Glu Arg Pro Ser Leu Tyr Thr
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Ala Ser Glu Met Ile Asn Pro Arg Thr
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Glu Val Asp Pro Ile Gly His Leu Tyr
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Ser Ser Leu Pro Thr Thr Met Asn Tyr
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Ile Ser Gly Gly Pro His Ile Ser Tyr

4359ptus sequence

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Leu Val His Phe Leu Leu Leu Lys Tyr
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Phe Ala Thr Cys Leu Gly Leu Ser Tyr
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Gly Ser Val Val Gly Asn Trp Gln Tyr
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Leu Gly Asp Pro Lys Lys Leu Leu Thr
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Phe Val Gln Glu Asn Tyr Leu Glu Tyr
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4359ptus sequence

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Gly Glu Asn Phe Ala Met Ile Leu Tyr
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Ala Thr Glu Glu Gln Glu Ala Ala Ser
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Ala Thr Glu Asp Ala Asn Thr Ile Gly
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Arg Gly Glu Ala Leu Gly Leu Val Gly
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Glu Ser Glu Phe Gln Ala Ala Leu Ser
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4359ptus sequence

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Gly Ser Asp Pro Ala Cys Tyr Glu Phe
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Ser Pro Asp Pro Pro Gln Ser Pro Gln
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Gly Ile Glu Met Cys Ala Ala Asn Tyr
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Ala Gln Asp Ala Pro Pro Leu Pro Val
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Ala Ala Asp His Arg Gln Leu Gln Leu
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Arg Thr Glu Ile Asn His Met Ser Ala
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4359ptus sequence

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Gly Pro Glu Ser Arg Leu Leu Glu Phe
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Phe Thr Val Ser Gly Asn Ile Leu Thr
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Pro Glu Ser Arg Leu Leu Glu Phe Tyr
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Leu Pro Val Pro Gly Val Leu Leu Lys
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Cys Phe Leu Pro Val Phe Leu Ala Gln
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4359ptus sequence

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Ser Ser Cys Leu Gln Gln Leu Ser Leu
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Asp Ala Asp Gly Pro Gly Gly Pro Gly
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Ile Pro Asp Gly Pro Gly Gly Asn Ala
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Leu Leu Glu Phe Tyr Leu Ala Met Pro
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Asn Tyr Glu Ser Pro Arg Thr Glu Ile
1 5

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4359ptus sequence

Gln Ala Glu Gly Arg Gly Thr Gly Gly
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